Molecular Biology

ROLE OF ALGZ IN THE REGULATION OF *PSEUDOMONAS AERUGINOSA* TWITCHING MOTILITY

Borys Gvozdyev[a], April Sprinkle[b], Daniel Wozniak[b], Patricia J. Baynham* [a]
[a]*Department of Biology, Thomas More College, Crestview Hills, KY, 41017*
Borys.Gvozdyev@Thomasmore.edu
[b]*Department of Microbiology and Immunology, Wake Forest University Medical School, Winston-Salem, NC,27157*

Pseudomonas aeruginosa is a Gram negative opportunistic pathogen possessing type IV pili that allow it to establish chronic infections. *P. aeruginosa* is a major pathogen in the lungs of cystic fibrosis patients, which frequently die due to respiratory failure. AlgZ is a DNA binding protein that was identified as a regulator of the production of the exopolysaccharide alginate. More recently it has been shown to be required for twitching motility (TM) which is the flagella-independent translocation across a solid surface that is mediated by type IV pili. The method by which AlgZ controls TM is unknown. This study tests the hypothesis that AlgZ DNA binding activity is required for TM. To test the hypothesis, three strains which encode AlgZ proteins with different point-mutations in the AlgZ DNA binding domain were generated via site directed mutagenesis and allelic exchange. The presence and expression of the *algZ* alleles was confirmed via PCR and Western Blot analysis. The strains were assayed for twitching motility and for the presence of surface exposed pili via transmission electron microscopy (TEM). Results indicate that AlgZ DNA binding activity is required for twitching motility and for the presence of surface exposed pili. This suggests that AlgZ may control a gene(s) that is necessary for type IV pili export, extension or assembly.